

component data. PowerMILL supports Wireframe, Triangle, Surface, and Solid models created by other Delcam products or from neutral formats such as IGES. If the relevant PS-Exchange translators are purchased PowerMILL will directly import data created by the majority of non-Delcam packages.

PowerMILL Environment:

1. Double click on the PowerMILL icon.
2. Pull Down menus are located across the top of the PowerMILL window. By placing the mouse over the menu and clicking with the left mouse key, this will open up the relevant submenu. Further selection can be done by moving the cursor along a right arrow ()

The Main toolbar is as shown on the following page. Each icon has a specific function and by holding the cursor over it, an appropriate description (or ToolTips) is displayed.

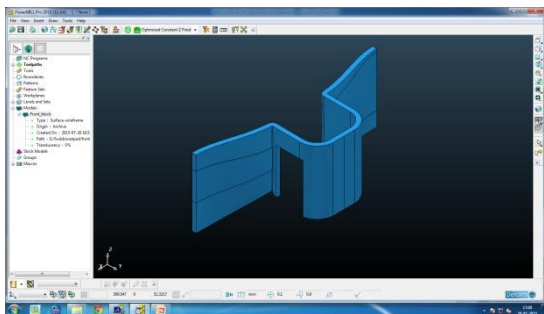


Figure 6: PowerMILL environment

On the right hand side of the screen is the Viewing toolbar. By selecting one of the icons a different view of the model and global transform is displayed in the central or graphics area.

PowerMILL

For the first exercise an existing model will be imported and used to illustrate some of the basic visual display options.

- 1) Select File -> Import Model.
The open examples form appears and the large icon e.g. provides access to an area within the PowerMILL product software tree where sample models are stored. The icons marked 1 and 2 can be customized by the user to locate areas where data for live jobs are stored.
- 2) Click on the e.g. icon.
- 3) Select the phone.dgk (For example) model and then click on Open.
The phone model is displayed as a wireframe viewed down the Z-axis. Only part of the model is visible, as it is too large to fit in the current view. To display the whole model the Resize to fit icon in the Viewing toolbar is selected.
- 4) In the Viewing toolbar, select the Resize to fit icon. The view of the model is scaled to the full screen
- 5) Select the ISO 1 icon.
You can now see the entire model quite clearly in an isometric wireframe view.
To see it shaded you need to select the shaded wire option.
- 6) Select the Shaded Model icon.

- 7) Select the Wire Model icon.
By pressing the wire icon again, the wireframe is hidden showing the model only in shaded.
- 8) Click on the Shaded Model icon and then click on the wire view icon.
Try the other Viewing icons and observe the results. Sometimes it is useful to be able to see inside a model. In order to do this, the model can be made translucent.
- 9) Select the Shaded Model icon.
- 10) Right Click over the Model and select Translucency from the menu.
- 11) Enter the percentage translucency you require (0 percent = opaque, 100 percent = transparent)
The model is displayed in translucent shaded mode allowing the user to see internal details
- 12) To return to normal shading set the translucency to Zero.

4. Conclusion

With increasing demand for small scale high precision parts in various industries, the market for small scale machine tools has grown substantially. Using small scale machine tools has grown substantially. Using small machine tools to fabricate small scale parts can provide both flexibility and efficiency in manufacturing approaches and reduce capital cost, which is beneficial for small business owners. In this thesis a small scale 3 axis milling machine is designed and analyzed. During the structure design stage the machine structure is explored and analyzed. Critical components such as linear guides, motors are selected among few different options. The best value components are selected to accommodate stiffness requirement and budget constraints.

In this project, firstly CAD model has been created using SolidWorks software. Then this CAD model is imported to CAM software such as PowerMILL. Then input commands are provided for cutting tool features such as tool diameter, depth of cut, length of cut etc. Then accordingly tool path is generated and part program is prepared.

In this way, human labor cost can be reduced; more accurate component can be manufactured automatically. It reduces total production lead time. It makes it possible to see how the component will be produced. Program can be generated in shortest time. It is more flexible. It requires less investment cost. It provides improved surface finish. It reduces manufacturing cost. It reduces tool loads. It provides high speed machining.

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